

Comment Number	Section	Document page number	Paragraph in page	Comment
1	N/A	N/A	N/A	The site is zoned for residential use, thus comparisons to Non-Residential criteria are insufficient. Please revise these occurrences throughout the report (particularly Section 4) and on the maps to show only exceedances of Non-Residential Direct Contact Soil Remediation Standards. Impact to Groundwater Soil Screening Levels should also be included as a screening reference for future samples.
2	N/A	N/A	N/A	EPA has previously requested that 1,4-dioxane be evaluated and reported as an SVOC, but the report refers to the VOC concentrations. The SVOC method for evaluating 1,4-dioxane is considered more reliable and has significantly lower method detection limits than the VOC method. Additionally, the SVOC results are incorrectly reported as TICs and need to be incorporated into the summary and delineation. Occurrences of 1,4-dioxane exceeding the Interim Groundwater Standards reported as TICs include (during various sampling dates) MW-1, MW-3, MW-6, MW-15, MW-16, MW-20, X-1, GW-TWP-7, and GW-TWP-9.
3	N/A	N/A	N/A	Statements comparing upstream concentrations in brooks to onsite ponds are misleading and should be deleted from the report. Besides being two completely different types of systems, brook locations would be subjected to many different point and nonpoint sources of contamination than onsite ponds. Nor is there any hydrological connection between the ponds and brooks.
4	N/A	N/A	N/A	It would be helpful to aide in the interpretation of the data in regards to nature and extent if sample locations presented in Appendix C were identified. It's understood that labeling might be "busy"; however, it would make it easier to cross reference the sample locations with the data in Appendix B.
5	N/A	N/A	N/A	Impacts to federally-listed (threatened) species and their habitat from any remedial alternatives under consideration should be assessed during the Feasibility Study. We recommend coordination and consultation with the USFWS.
6	N/A	N/A	N/A	EPA had previously determined that the Wilderness Act may be an ARAR for the project, as the eastern half of the GSNWR was designated as a wilderness area by Congress in 1968. The project should assess any future remedial alternative to impact the federally-designated wilderness area portion of the GSNWR should be assessed during the FS.
7	N/A	N/A	N/A	There are no wild and scenic rivers, coastal resources, coastal barriers, or significant agricultural lands in the vicinity of the site. The site does not lie within the designated coastal zone of the State of New Jersey. Therefore, the Wild and Scenic Rivers Act, the Coastal Barrier Resource Act, and the Farmland Protection Policy Act, and the Coastal Zone Management Act are not ARARs for this project.
8	N/A	N/A	N/A	We note that a previous document concerning the installation of monitoring wells at this site stated that no properties on the New Jersey or National Register of Historic Places were found in the vicinity of the proposed activities. In general the lack of known sites is not enough to preclude potential adverse effects to cultural resources protected under the tenets of the National Historic Preservation Act (NHPA). We recommend that if and once a ground disturbing remedy is likely, a Stage IA Cultural Resource Survey should be completed, to determine if effects to historic resources are possible, and to ensure compliance with the NHPA.
9	N/A	N/A	N/A	<p>According to available GIS layers, much of the site is located within the 100-year floodplain as determined by the Federal Emergency Management Agency. Accordingly, we recommend that future documents include a delineation of the 100-year and 500-year floodplain. If any future remedial activities are proposed within either floodplain, a floodplain assessment will be needed. In addition, that this assessment should include:</p> <ul style="list-style-type: none"> • a description of the proposed action; • the effects of the proposed action on the floodplain; • a discussion of the impacts of the proposed action as compared to the other options; and • measures to mitigate potential harm to the floodplain if there is no practicable alternative to locating in or affecting the floodplain, including measures to mitigate any potential impacts from the proposed remedial action from flooding events both during and after implementation of the proposed remedy. <p>This assessment will be needed to protect the remedy against the adverse effects of the 100-year and 500-year flood, including the spreading of contaminants and the long-term disabling of needed remedial treatment systems.</p>
10	N/A	N/A	N/A	<p>The RI report notes that 202 acres of wetlands exist in the survey area, including 30.6 acres within the landfill. A review of National Wetlands Inventory GIS mapping indicates the site is not completely surrounded by wetlands. If wetlands are proposed to be impacted by future remedial activities, in addition to the completed delineation, a wetlands assessment will be needed. The assessment should include:</p> <ul style="list-style-type: none"> • an assessment of wetlands values and functions; • a characterization of flora and fauna; • a brief discussion of the impacts of any preferred remedial alternative as compared to the other options; • the effects of contaminants on wetlands resources; • measures to minimize potential adverse impacts that cannot be avoided; • replacement for wetlands losses (mitigation); and • a post-mitigation monitoring plan, if needed

11	N/A	N/A	N/A	Section 6 - The fate and transport work might be better presented prior to the site conceptual model, and probably merits its own section earlier in the report.
12	N/A	N/A	N/A	Section 7 - The surface soil delineation is difficult to follow. There are several contaminants that exceed ARARs at the perimeter of sample locations especially PCBs and benzo(a)pyrene. There is a discussion about these being background conditions; it might be good to set a background range for these and show a figure that just shows what exceeds background. There is an instance of vanadium exceeding ARAR at the perimeter. The same is true for sediments (especially metals, PCB, pesticides and some SVOC), to a lesser extent surface water and groundwater (mainly groundwater). In general the report seems heavier on characterization with delineation not as well presented or more difficult to understand due to the volume of data and the reliance on background while background levels are not directly accounted for in the box maps.
13	N/A	N/A	N/A	There appear to be several table, figure and appendix references that are possible remnants from a previous version. There are also reference to the SCSR that appear as though they should be addressing the RIR. Please review the document and make sure that all references are appropriate and correct for this report.
14	N/A	N/A	N/A	The report organization is hard to follow in some respects. For example, Appendix I seems to include only Phase 1 investigation results. It is recommended to include both phases.
15	N/A	N/A	N/A	It is recommended that a section be added to discuss the screening criteria selected to evaluate environmental data for the RIR. The discussion should include explanations of the criteria for various environmental media (e.g. soil remediation standards - inhalation/direct contact vs. impact to groundwater, groundwater quality standards based the appropriate aquifer classification for the site, soil vapor screening levels for vapor intrusion criteria).
16	N/A	N/A	N/A	It would be good to have a table added that indicates which surface water and sediment samples were upstream brook samples, downstream brook samples, pond samples. What samples are in neither category – such as samples collected in the wetlands. The brooks should be better labeled on the maps, especially Black Brook.
17	N/A	N/A	N/A	Use of the term "ubiquitous" when describing presence of metals in soil is too general. The description of which metals that were detected should be more specific.
18	N/A	N/A	N/A	It is very difficult to follow exceedances using report figures in Section 4 (box maps of all exceedances). Additional figures similar to those in Appendix C (presentation of what is below RDC and above NRDC in surface soil and sediment; one contaminant per map) would be helpful in evaluating the site contamination.
19	N/A	N/A	N/A	No deep groundwater samples were collected (or results were not presented) for vertical delineation of groundwater. Provide any deep groundwater data collected in the RI. A more thorough description of the confining thick clay layer that is preventing downward migration of contamination should be included.
20	Figures	N/A	N/A	Figure 4-1's: Please include background soil locations and results on one of these figures. Figure 4-2: Please update to include the 1,4-dioxane results as an SVOC as reported in the TICs. Figure 4-3: It may be helpful to indicate a flow direction for the Black Creek and Loantaka Brook, or include the table from the report text categorizing each location as upgradient or downgradient. Figure 4-4's: Aroclor is misspelled in the legends.
21	Appendix B	N/A	N/A	Appendix B Table B-3G: Please update to include Impact to Groundwater screening levels. Appendix B Table B-4B: 1,4-dioxane should not be reported as a TIC. Additionally, please include a row of "Total TICs" and compare to the NJDEP Interim Groundwater Quality Standards in Table 2 for Synthetic Organic Chemicals (http://www.state.nj.us/dep/wms/bears/Appendix_Table_2.htm). Appendix B Table B-4C: NJGWQC in this table should be updated to include interim GWQC to match the GWQC presented on the rest of the tables and figures.
22	N/A	N/A	N/A	Executive Summary: There does not appear to be a summary of the fate and transport of constituents of concern, the conceptual site model in the executive summary. It is recommended that the executive summary include a discussion of each of the bullets noted in Section 1.3 Contents of the RIR.
23	ES	xix	1	Are the inorganic concentrations found consistent with site-specific background?
24	ES	xix	1	Revise this paragraph to include a statistical evaluation of onsite results and background levels.
25	ES	xix	1	Revise this to read, "Although the shallow aquifer is identified by NJDEP as a Class 2A potable aquifer, it is not currently used for as a drinking water."
26	ES	xv	3	Please revise, 18 feet is not considered a relatively thin depth of fill material.
27	ES	xv	3	Include the ball field and the shooting range on Figure 1-2 and 1-3 for delineation of the site.
28	ES	xv	4	Consider including the acreage owned by the GSNWR and the Green Village Fire Department (out of the approximately 170 acres total).
29	ES	xvi	1	The location of Black Brook is not labeled on any of the Section 1 figures, please add labels for Black Brook.
30	ES	xvi	1	Please delete "hydrologic input from direct precipitation" as precipitation would be an input to all water bodies. The ponds appear to at least be partially located on the landfill, not just adjacent to it. please revise text accordingly.
31	ES	xvi	1	Please explain why there is only a hydraulic connection between the large pond and groundwater.
32	ES	xvii	2	This paragraph states that the selected ARARs may change during remedy selection process. Please provide further discussion of potential changes.
33	ES	xviii	1	How was it determined that there were no landfill related impacts on the ball field and shooting range? Include a description of how this was determined.
34	ES	xviii	1	Include a discussion of constituents which pose risk due to potential migration to groundwater.
35	ES	xviii	2	A description of the direction of groundwater flow should be added. For example, under the third bullet point, what are the downgradient wells from MW-7?
36	ES	xx	1	Revise to read, "Although the Site is zoned residential and EPA is aware of no formal plans to change the zoning or restrict future land use, if the zoning of the Site..."
37	ES	xx	2	"Overall, carcinogenic excess lifetime cancer risks (ELCRs) and non-carcinogenic risks are presented in the BHHRA are based upon conservative assumptions that are intended to be protective of human health by [add "likely" here] overestimating."
38	ES	xxi	1	"Here, multiple conservative assumptions were intentionally used to take the uncertainties into account." Revise to read, "Consistent with national guidance on conducting a risk assessment, the RIR protects for the reasonable maximum exposed (RME) individual in a population, parameters were selected that are not likely to underestimate risk."
39	ES	xxi	2	1st bullet: Revise this to include any risks above acceptable levels, as well as any risks associated with site-related contaminants.

40	ES	xxi	2	2nd bullet: What are the relevant ARARs for soil, surface water and sediment? Have they been determined?
41	ES	xxi	2	2nd bullet: What does "significantly" mean? Since unacceptable risks have been identified, ARARs have been triggered. Please clarify this to identify the extent of soils that exceed ARARs.
42	ES	xxi	2	4th bullet: Provide a more detailed description of the PAHs, pesticides and inorganics so that a clear understanding and context of what is found upgradient and/or downgradient is presented.
43	ES	xxi	2	The RI states that all the elements of the RI and risk assessments are complete, but previously it was stated that some contamination is still being investigated (delineated). Please revise accordingly to correct this discrepancy. It should also be stated (where appropriate) that ongoing groundwater evaluation will be presented in the final RI report or as an addendum.
44	ES	xxii	1	Provide a more detailed description of the constituents so that a clear understanding of what is found upgradient and/or downgradient is presented.
45	ES	xxii	1	The last bullet reads, "There is no unacceptable ecological risk, except there is." Please revise this to more accurately present the conclusions of the BERA.
46	1.2.1	1	3	The statement, "its rural character could be impacted if development occurs," is not relevant for RI purposes and should be removed.
47	1.2.1	2	1	This paragraph should note that several smaller ponds are present on the landfill, in addition to the larger ones cited.
48	1.2.1	2	3	Please include all business entities that are currently operating on the landfill property. There are empty dumpsters on the property, which do not appear to be owned by the landscaping businesses.
49	1.2.2	2	4	Figure 1-3 shows a tiny portion of the Site is owned by David M. Bakunas, trustee. This should be mentioned/explained.
50	1.2.2	2	5	Site Ownership section includes current ownership; it is typical to include the past ownership history.
51	1.2.3	3	2	The text states that USFWS purchased 310 acres of land for landfilling purposes. This statement should be verified and revised. The USA acquired two parcels in 1964 (Lot 189.01 and Lot 189.02) and a portion of Lot 189.02 is part of the Site and had an easement which allowed sanitary landfill operations until December 31, 1968.
52	2.2	7	6	Ten of the POIs had drums or drum remnants, not just three. Add a statement indicating why test pits/sampling were not conducted at all drum areas.
53	2.2.1	8	3	The wetland delineation was done in 2006. Both the US Army Corps of Engineers and NJDEP typically apply a five-year lifespan to delineations, so site wetland boundaries may have to be rechecked.
54	2.2.1	9	4	In what year(s) were the NJDEP permit equivalents approved ?
55	2.2.1	9	6	The suspected origin of monitoring wells X-1 through X-7 should be discussed in this section, as their installation predates the formal RI activities (according to Table 2-2, they were either installed in the 1990s prior to the major RI phases, or unknown).
56	2.2.2	11	2	Where is the drum staging area located? Perhaps add to Figure 1-2.
57	2.2.2	12	3	Explain why a 1-ft deep test pit was enough to delineate edge of landfilled materials.
58	2.2.2	12	3	State why no soil samples were collected during POI-1 investigation. Describe how the POIs were eliminated from consideration.
59	2.2.3	14	2	The report cites that 4-foot long steel macro-core samplers and acetate liners were used during direct-push activities, but the logs in Attachment D refer to 5-foot intervals. The typical length is 4 feet, but please double check and amend as needed.
60	2.2.2	14	3	Where are results of post-ex sample from POI-17/18?
61	2.2.4	16	3	Include a description of the regulated areas. Explain why sampling frequency was less in the regulated areas. Explain why no subsurface samples were collected in the regulated area.
62	2.2.4	16	4	Please review and clarify why no discussion of surface samples at POI-14 which had car battery casings were included? According to Figure 2-4 there was a sample collected here.
63	2.2.4	16	5	This is the first mention of Weston in the report. Please describe Weston's role in the sampling. The results of samples collected by Weston do not appear to be included in RI. Was Weston's Assessment Team mentioned earlier? Provide an explanation for soil samples collected at TP-09? There was potential industrial waste observed there, but that was also true at TP-20-1 and TP-20-2.
64	2.2.5	18	4	Add greater detail about how wells were developed.
65	2.2.5	19	3	The sentence about purge rates is confusing, please revise and clarify this discussion.
67	2.3	25	1	The fourth bullet at top of page refers to HC-1 as a monitoring well. HC-1 is not a monitoring well. This is the Hunt Club well that was hooked up to a spigot and was previously used for well water supply.
68	2.3.1	25	7	The first paragraph indicates that soil sampling was performed to delineate constituents present at concentrations above the SRS. Please add a discussion that the SRS are based on direct contact/inhalation pathways. Were impact to groundwater values considered in developing the screening criteria for evaluating environmental contamination in the RIR? Delineation for Groundwater screening levels (TBC) should be included.
69	2.3.1	26	1	This paragraph refers to soil samples SS-125 through SS-158, SS-165 through SS-183 and SS-187 through SS-191. Several were considered sediment, it would be helpful to note that here, SS-125 through SS-158 are missing from the soil tables.
70	2.3.1	26	4	Note that the soil samples collected in association with the temporary wells were collected 11 months after the temporary wells were installed and sampled. The text should be revised to reflect this.
71	2.3.2	27	2	Some samples in the range SD-45 through SD-69 were considered soil; please cite as these samples are not on the sediment tables.
72	2.3.2	27	3	This paragraph states that "composite" sample was collected; homogenized would be a more accurate term. Please revise the text accordingly.
73	2.3.4	28	6	Please advise if the nine temporary monitoring wells have been abandoned/removed.
74	2.3.5	29	1	Note that pore water samples were collected in place of MW-13 which could not be installed. Also, the porewater samples were inside the site boundary; proposed well was to be outside site boundary. Please clarify this in the text.
75	2.3.6	30	4	Specify parameters for filtered samples

76	2.3.7	31	1	PW-1 was inside landfill boundary. Sampling procedure was to purge with peristaltic pump and sample with bailer. Please revise the text to include this information.
77	3.1	32	1	This references Section 2.4.2; there is no such section, it appears as though it should be 2.2.4, please confirm and revise the text.
78	3.1	32	2	The text states that total excavation depths ranged from 1 to 18 feet. Does this refer to the depth of the excavations during the test pit investigation or depth of fill material encountered in test pits. Please clarify in the text.
79	3.1	32	3	Several perimeter test pits had trash, several only went 1 ft. TP-10 was perimeter and clean, but only went 1 ft. Some edge areas lack a test pit. This may not be sufficient to delineate edge of landfill for purposes of the feasibility study or later design efforts. Please revise the text to provide this consideration.
80	3.1	33	1	The west facing transect discussion for TP-10 is unclear. Please review and clarify the text.
81	3.1	33	1	Reference to Section 2.2.1.3 is incorrect. Seems to refer to 2.2.2, but this section does not include discussions of TP-10, as suggested here.
82	3.1	34	1	The landfill is very large, and there are probably non-landfilled spots in many areas. This section of the Site wasn't particularly well delineated and it is small in size and it should be included in the landfill boundary.
83	3.1	34	2	References to 2.4.2 – should be 2.2.4.
84	3.3	37	4	Recommend that the discussion of the glacial sediments above the glacial lake clay unit be discussed in more detail as this is the key water-bearing unit that affects the migration of groundwater and is impacted by the Site. In particular, the characteristics of the sand units (e.g. thickness, aerial extent, continuity of beds) are important to a discussion of the transport of contaminants and the development of the conceptual site model.
85	3.4.1	38	4	Include a discussion of the NJDEP classification of the aquifer that requires it be protected as a Class 2A potable aquifer.
86	3.4.2.1	39	1	This section notes that completed monitoring well depths in the shallow subsurface aquifer range in depth from 9.0-14.5 feet. Based on Table 2-2, it should be clarified that those numbers represent the well screen depth (not completion depth) for MW-1 through MW-20. If wells X-1 through X-7 are meant to be included in this summary, the numbers should be adjusted accordingly.
87	3.4.2.1	39	2	As with the discussion of local geology, the discussion of local hydrostratigraphic units should discuss details of the water-bearing units (silt, sand and clay). What is the saturated thickness and how they relate to hydraulic conductivity estimates in support of future flux calculations. It is also recommended that the cross sections be extended to include the streams that are concluded to be local discharge points, and that consistent scales be used for all of the cross sections so that they are more easily compared.
88	3.4.2.2	40	2	The next to last sentence states that “Depths to water below groundwater surface in the wells..”. Should this say “Depths to water below ground surface in the wells”?
89	3.4.2.2	41	2	Please include a brief description of surface water depths, or include in Section 3.5.1
90	3.4.2.3	42	1	Please present the equation (if hydraulic conductivity was calculated) or the graphs used (if graphical method was used) along with a discussion of how the method was used: the assumptions (e.g. saturated/aquifer thickness), conversion factors (e.g. gpd/ft to ft ² /day) and limitations of the method used. Table 1 from Attachment G appears to be an important summary of many of the factors. Perhaps it would help to make the table part of the RIR tables included in the body of the report as it would help the reader understand which wells were used and what the range of hydraulic conductivity is for each well.
91	3.4.2.3	42	2	The “Darcy groundwater velocity” is not the same as average linear velocity. It is actually a flux that does not include porosity in its calculation. Recommend changing the term used in the sentence.
92	3.4.2.4	43	2	Based on the range in clay thickness from literature and the observed well depth, it is possible that well HC-1 was completed in fractured rock. Water supply wells completed in rock typically require open hole construction. HC-1 appears to be a bedrock open hole well based upon the video inspection. Please confirm and revise the text accordingly.
93	3.6.3	50	2	The term “Other” in the wetland table on page 50 might be clarified to say “Phragmites on landfill”. If the three ponds (total 8.3 acres) are shallower than 2 meters, they would be considered “palustrine open water” wetlands and may be added to the wetland table.
94	3.7.1	53	3	The table on page 53 identifies this as "formerly listed", but this language suggests that the bog turtle is currently listed. Please revise to clearly identify the status.
95	4.1.1	57	1	Dozens of old telephone hand sets are present in one area of the landfill (west of MW-7 or MW-6).
96	4.1.2	58	2	The text states that the landfill has been subjected to unauthorized waste disposal. Has this been documented and confirmed?
97	4.1.2	58	2	Please provide example(s).
98	4.2.1	60	2	Describe or document evidence of skeet shooting over the ponds as opposed to the shooting range? Is this a significant source of contamination? How was this determined?
99	4.2.1	60	2	The discussion about industrial waste at test pit location TP-09 and the significance of mephenesin at the location is confusing. It is concluded that the waste may be industrial due to “visual observations” (please clarify) and high levels of some contaminants (later described as PCBs and VOCs), however, there is a lengthy discussion on why the presence of mephenesin does not indicate industrial waste. This is contradictory. It was unclear that the “dark clay” sample collected was waste, not soil, which would require further delineation. Clarify that, although mephenesin was detected at TP-9, it was not a reason to characterize the location as industrial waste. This entire discussion should be reviewed and clarified.
100	4.2.2	62	1	This section over emphasizes that mephenesin is a TIC and that concentrations were estimated, casting doubt on whether it is really present. Mephenesin was a TIC because it is not a candidate compound in the analysis, and the concentration is estimated for the same reason (it is not a matter of “furthermore the concentration was estimated”, as stated in the text). Its concentration was not high enough to require sample dilution, raising the reporting limit for calibrated compounds. Mephenesin was also found in groundwater in the same area, so whether it is mephenesin or something else, some compound is there and the discussion should be revised as noted above.
101	4.2.2	62	3	Discuss why no soil samples were collected near POI-1. Post excavation soil samples were collected at POI-17 and POI-18; where are the results provided?
102	4.3	63	2	The information in these bullets should be more exact. Identify the number of drum samples that were analyzed and in which PCBs were detected; identify the number of samples in which pesticides were detected; and the last bullet should be revised to contain significantly more information - why is antimony in one sample the only inorganic that is discussed?

103	4.3	63	3	Where text reads “A comparison to Residential and Non-Residential SRSs is presented in Appendices A-3A and A-3B.”, that should be Appendices B-3A and B-3B. Please review and revise.
104	4.3	63	3	Regardless of the anticipated future use of the site, it is zoned for residential use and needs to be evaluated as such.
105	4.3.1.1	64	2	Earlier in the RI, it said that three of the locations were not sampled for soil. Please verify.
106	4.3.1.1	64	2	PCB congeners, dioxin, furans were not included in Appendix J for reference areas. Please review and revise the text accordingly.
107	4.3.1.1	64	3	Revise this to read, "...are less than or within the acceptable risk range for residential soil (4.6E-06 ng/kg - 4.6E-04 ng/kg)...."
108	4.3.1.2	65	1	Revise this to read, "...are less than or within the acceptable risk range for residential soil (4.6E-06 ng/kg - 4.6E-04 ng/kg)..."
109	4.3.1.3	65	3	The data used for the statistical evaluation is not contained in the RI report; it is in the SCSR. The RI should clearly indicate what data sets were used and provide a description of how the analysis was performed, what data was used and give the rationale for how the evaluation was conducted.
110	4.3.2.2	66	5	This section discusses the results of soil sampling at an onsite shooting range north of the landfill. Samples from this area were not elevated in lead. Later it is speculated that an offsite shooting range could have contributed lead to offsite soils west of the landfill. The report should be clear as to which shooting range is being discussed and why it is concluded that one may have contributed lead to soil when another does not appear to have.
111	4.3.2.3	67	2	The statement is made that certain VOCs were detected in low concentrations at isolated samples and were limited to BTEX compounds. Ethylbenzene and xylene were the only BTEX compounds. EB was found in 3 of 10 samples, xylene in 4 of 10 samples. Those do not appear “isolated”. Please remove the word "isolated".
112	4.3.2.3	67	6	Include 4,4-DDE and heptachlor epoxide among list of most commonly detected pesticides; only gamma chlordane and alpha chlordane was detected in all 10 samples – text suggests otherwise. Please review and revise accordingly.
113	4.3.2.3	68	2	TEQ for dioxin does not match that listed in Attachment J.
114	4.3.2.5	69	1	Please correct discrepancies in the following parts of the document: References Attachment I (presumably Table 25) – Attachment I only includes Stage 1 and Stage 2 samples (through 2004). Attachment J references a total of 123 sample locations for landfill, Landscape Area 1 and Landscape Area 2/Hunt Club. This page of the RI references 122 locations. Largest N on Attachment J (table 25) is 121. Tables 23 and 24 summarize samples from the Landscape Areas/Hunt Club separately – are they excluded from Table 25? Number of locations, and what is included in each table/discussion is confusing. Please review and revise for clarity.
115	4.3.2.5	69	1	“The baseball field and shooting range were excluded from this data summary because they are located outside the landfill boundary.” Please rephrase this statement to reflect that the shooting range are outside of historically landfilled areas, because current phrasing makes it seem like they are being excluded from the Site definition.
116	4.3.2.5	69	4	This section discusses the presence and frequency of contaminants detected in surface soil samples at the Landfill, but does not discuss distribution. Were the contaminants randomly distributed or concentrated in certain areas of the Landfill? Please discuss the distribution in all sections presenting the results of soil sampling and analysis. References to figure(s) are not sufficient to support the conclusions of the investigators.
117	4.3.3	72	5	It is not necessary to include the chemical names and historic uses of chlordane, dieldrin, alpha-BHC, and 4,4'-DDD.
118	4.3.3	73	1	Please consider whether a statement can be made on likelihood of point source for inorganics and PCBs, similar to what was said about other contaminants, and revise the text accordingly.
119	4.4	75	2	Appendix reference should be B-3A and B-3B, which covers TCL/TAL and congeners.
120	4.5	76	table	There are other exceedances; it is recommended to add a comprehensive table.
121	4.5.2	78	1	States that sample depths ranged from 9 to 19 feet bgs; a sample was collected 24.5-25’ deep at SS-177. Please review and revise accordingly.
122	4.5.1.5	78	2	Please note the typographical error
123	4.5.2	78	4	"The sample depths ranged from approximately 9 to 19 feet [add "below"] grade, with the shallow sample at each boring representing soil immediately below the landfill waste and the deep sample representing soil immediately above the regional clay unit."
124	4.5.3	78	6	Appendix table B-3B does not show the non-cancer USEPA RSL and does not distinguish which samples exceeded the non-cancer risk from which only exceed the cancer risk RSL.
125	4.6	79	2	Please add that the groundwater beneath the site is classified as a Class IIA aquifer “..results are compared to GWQS for Class IIA aquifers..”
126	4.6	79	3	The second paragraph indicates that the July 22, 2010 version of NJDEP GWQS were used. Please indicate if these are the values in effect when the RIR is released. For example, it appears that the interim criteria for 1,4-dioxane is not the most current value.
127	4.6.1.1	79	6	Change interim specific GWQS of 1,4-dioxane to 0.4 ppb.
128	4.6.1.1	80	1	Remove SVOC/pesticide discussion – this paragraph and the next are about VOC.
129	4.6.1.1	80	5	The last paragraph cites published data for metals in groundwater to state that metals in groundwater at the Site warrant no further inquiry because site concentrations are similar to background. Text specifically cites aluminum, arsenic, iron and manganese but no published reference is provided for aluminum. Maximum iron and manganese concentrations at the site (Appendix I) are higher than the cited background ranges. These factors as presented do not seem to support that no further inquiry into metals in groundwater is necessary.
130	4.6.1.1	81	2	These paragraphs discuss TICs in groundwater; no discussion of estimated concentrations, whether they exceeded generic groundwater criteria (carcinogenic/noncarcinogenic) or why further investigation is or isn’t warranted. This discussion should be added to the report.
131	4.6.1.1	81	3	It is not necessary to include the use history of glutethimide (pg 81).
132	4.6.1.2	81	6	Figure 2-6 should show locations of all temporary and permanent wells; and should also show pore water location PW-01 rather than solely discussing it in the text.
133	4.6.2.2	83	2	third, fourth, fifth, sixth, seventh bullets - Table 4B-A does not highlight these SVOC exceedances; for TWP-6 benz(a)pyrene equals, does not exceed standard.

134	4.6.1.2	84	1	In some cases filtered metals concentrations are similar to unfiltered concentrations. Arsenic, iron, manganese and sodium in MW-3 for example. Not all cases of metals exceedances seen are related to colloids – especially iron and manganese. List of metals exceedances leaves out some that exceed in temporary well points, e.g. chromium, cobalt, copper (and cyanide). The idea that metals concentrations are due to colloids is not necessarily supported, this paragraph should be revised accordingly.
135	4.6.1.2	84	4	This discusses TICs in groundwater, stating that their presence is not confirmed because they were detected in only one of two sampling events in 2015 and concentrations were low. However, they were detected in the previous phase. In addition, TIC concentrations are estimated, results from a calibrated analysis could be very different than TIC concentrations. TICs should be evaluated further to see if they warrant calibrated analysis. This also applies to TIC mephenesin, found GW-TWP-8, and in a waste sample from TP-09.
136	4.6.3	85	3	This section considers four overall areas of groundwater impact (southwestern benzene and 1,4-dioxane at MW-3; northwestern Freon compounds at MW-10, 18, and some TWP locations at MW-7; and benzene at MW-19). The following additional areas also show localized groundwater impact and should be added to the list: GW-TWP-1 through GW-TWP-4 in the northwest: In addition to CFCs at TWP-1 and 2, TWP-2 through 4 have various pesticides, TWP-1, 3, and 4 have PAHs, TWP-3 and 4 have PCBs. MW-6 and 7 have 1,4-dioxane (reported as an SVOC TIC) at both locations in 2015 in addition to prior detections as an SVOC at both in 2008. The samples between 2008 and 2015 for reported high detection limits of 100ppb.
137	4.6.3	85	4	Include a discussion of the 1,4-dioxane, similar to what's presented for benzene.
138	4.6.4	85	4	Include a discussion of how the concentrations have or haven't changed over the sampling events.
139	4.6.5	85	4	Were these detected in filtered or unfiltered samples?
140	4.6.6	85	4	This suggests that the contamination isn't a significant concern. However, if the extent hasn't been defined, it is not known if the MW has characterized the worst of any contamination that is present. Revise to read, "The extent of benzene has not been defined; the benzene result only marginally exceeds the applicable standard.
141	4.6.3	85	4	Benzene exceedance at MW-10 is not discussed. PCB exceedance at TWP-4 not discussed. SVOC and pesticide exceedances not discussed. Please revise to include all exceedances.
142	4.6.3	85	4	Bullet 1: Please remove assumption that natural attenuation processes may be degrading benzene at MW-3. This discussion belongs later in the report, not in the presentation of results. Bullet 2: Please mention the recent porewater delineation activities for CFCs near MW-10/18. Bullet 3: The second sentence of this bullet is misleading. The nearby (offsite) downgradient wells from MW-7 (in the middle of the landfill) are nearly 1,000 feet away. Suggest rephrasing to maintain that PCBs aren't present in the downgradient offsite wells, but remove that they are nearby. Bullet 4: Please mention the recent porewater delineation activities for benzene near MW-19.
143	4.6.3	85	4	Bullet 2: 2nd sentence - typo
144	4.6.3	85	4	Bullet 3: remove "nearby and", replace with "off site"
145	4.6.3	86	1	As noted above, dismissal of metals in groundwater as being due to ambient conditions and/or colloids is not well supported and should be reviewed and revised.
146	4.6.3	86	2	Bullet 3: Please amend to include MW-10 in the porewater delineation areas.
147	4.8	87	2	Figure 4-3 shows exceedances of NJDEP criteria but not of USEPA criteria. Consider adding a second figure as showing both criteria's' exceedances is too much for one figure.
148	4.8	87	2	Here, the Federal ARARs of EPA National Ambient Water Quality Criteria (NAWQC) are referenced, but NRWQC (National Recommended Water Quality Criteria) are used on the Table B-6. Please reconcile this discrepancy.
149	4.8	87	3	There are a number of instances where the semi-quantitative analysis indicated that specific contaminants were elevated compared to background, but the results were not discussed in the report. The text should be revised to explain why these results were not included, for instance, is it because the concentrations of these contaminants were below ARAR's?
150	4.8.1.1.1	88	3	Indeno(1,2,3-cd)pyrene exceedance of ARARs is noted in this section and on Table B-6A (SW-7, 2/25/08), but not included on Figure 4-3.
151	4.8.1.1.2	89	2	Identify which five samples are the downstream Loantake Brooke samples. It's difficult to follow the figure/text without that.
152	4.8.1.2.2	90	6	Identify the ten downstream samples for Black Brook.
153	4.8.1.2	92	1	Based on upstream data, the concentrations of barium, cadmium, copper nickel and zinc found downstream in Black Brook may indicate landfill impact; however, report suggests otherwise for these contaminants based on their statistical analysis. See review of statistical analysis.
154	4.8.1.3	92	1	Since the brooks don't feed into the ponds (as per Section 3.5.1.1), comparisons of constituents in the ponds to the brooks should be omitted.
155	4.8.1.3	92	2	This states that benzene, TCE and VC were found in ponds at similar concentrations collected in the brooks upstream of the site; the Figure 4-3 shows no exceedances of these compounds upstream of the site. These VOCs are not listed in the upstream summary for the brooks in Attachment I. Seems contradictory; see review of statistical analysis.
156	4.8.1.3	92	3	Statements comparing upstream concentrations in brooks to onsite ponds are misleading and should be deleted from the report. There might be some validity when comparing inorganic constituents to regional geology, but when discussing chemicals such as VOCs and SVOCs it is without merit. Besides being two completely different systems, upstream brook locations would be subject to different potential sources of contamination than onsite ponds. Nor is there any hydrological connection between the ponds and brooks.
157	4.8.1.3	92	3	This states bis(2-ethylhexyl)phthalate concentration in ponds is similar to upstream of landfill, but there are exceedances in pond, none shown upstream on Figure 4-3. This compound is not listed in the upstream summary for the brooks in Attachment 1. See review of statistical analysis.
158	4.8.1.3	92	5	This states that dissolved manganese appears elevated relative to upstream conditions. Based on Appendix I, total and dissolved manganese appear similar to each other, and to upstream conditions.

159	4.8.3	93	4	In describing the ARAR exceedances in the large ponds, VOC exceedances from the first phase of investigation were omitted (benzene, TCE, vinyl chloride at SW-3). Please update.
160	4.8.2	94	1	SW-SW-44 (not SW-44) is located near the northwestern edge of the landfill (not the northeastern, as stated).
161	4.8.3	94	5	This paragraph omits VOC exceedances in ponds. Please revise.
162	4.8.3	95	1	As stated in previous comment, manganese concentrations in ponds may not suggest landfill impact based on Appendix I.
163	4.9	95	3	It would be helpful to note somewhere which sediment samples are considered to be upstream of the landfill considering the radial nature of groundwater and (presumably) wetland flow indicated on Figure 3-5 through 3-7 (especially in the northwest corner of the site).
164	4.9	95	5	The reference for BTVs should be Table B-7D, not B-7C.
165	4.9	95	5	If the three ponds are hydrologically isolated from Loantaka and Black Brooks, then they may be covered by Executive Order 11990 rather than the CWA Section 404 ARAR.
166	4.9.1.2.2	99	3	The presumption that “Aroclor-1254 may occur in upstream sediment at concentrations greater than those observed downstream” because of reporting limits above screening standards is removed. There are various locations and media that have reporting limits greater than screening limits/promulgated standards, and these conjectures aren’t made elsewhere. PCBs are a concern at the landfill. To properly address this hypothesis, the report should present the upstream MDLs.
167	4.9.1.3	100	4	Since the brooks don’t feed into the ponds (as per Section 3.5.1.1), comparisons of constituents in the ponds to the brooks should be omitted.
168	4.9.1.3	100	5	The statement is made attributing PAH contamination in the West pond to clay pigeons from the shooting range further to the west. Has the presence of clay pigeons been confirmed in the pond or along its western banks to justify this statement? Is it even possible intact pigeons can travel that far, let alone fragile ones that were shot? Please provide evidence to support such statements, and if not, delete from the text here and elsewhere throughout the document.
169	4.9.1.3	101	1	The comparison of Aroclor-1254 concentrations in the large pond (SD-2) to “upstream Loantaka Brook” is not a valid comparison and should be deleted from the report. The brook does not flow into the pond. Additionally, the flow contour maps (and the wetland nature of the area north of the large pond), the “upstream Loantaka Brook” locations (SD-65 and SD-69?) with Aroclor-1254 are not upstream, and is hydrologically downgradient of the landfill. No PCBs were detected in the true “upstream” locations. As requested in the surface water section, please include a list of “upstream” versus “downstream” sediment sampling locations. Perhaps the PCBs detected in the pond are attributed to the landfill since the sample SD-2 was collected near an outfall ditch from the landfill.
170	4.9.1.3	101	6	Provide evidence/documentation of skeet shooting over the ponds or delete reference, see previous comment.
171	4.9.2	102	3	The text states that PCB congeners were detected in only five locations. Since Aroclors were detected in many more locations, PCBs congeners would be expected to occur, at a minimum in many. Additional text should be included to state they were analyzed in only a fraction of samples submitted for PCB Aroclors.
172	4.9.2	102	4	The entire section on sediment compares values detected to ecological-based screening benchmarks except here where it is compared to RSLs. For consistency, the discussion on dioxin should focus on comparison to ecological criteria as what was done elsewhere.
173	4.9.2	103	1	Table 2-1 Points of Interest description for POI-14 states "pile of car battery casings". The fact that lead at SS-169 and SS-170 was at lower concentration than at SS-144 does not preclude the area was impacted by the landfill. More data would be necessary to rule out the landfill as a source of lead at SS-169, SS-170, SS-171, and/or confirm off-site shooting range as source.
174	4.9.3	103	2	PCBs were omitted from the list of constituents exceeding EBSLs in the Loantaka Brook downstream of the landfill.
175	4.9.3	103	3	This paragraph inaccurately states that PCBs were not found in Black Brook samples downstream of the landfill (see SD-37,SD-59, SD-173, SD-56 among many others). Please remove the statement about uncertainty regarding upstream concentrations because of detection limits, or add those uncertainties to other evaluations throughout the report.
176	4.9.3	103	4	Please see previous comments regarding upstream versus downstream PCB conclusions.
177	4.9.3	104	1	Please explain how concentrations of VOCs, SVOCs, and pesticides found in upstream locations in Loantaka and Black Brooks can be used to put into context regional sediment quality, for comparison to on site ponds. Besides being two completely different systems, upstream brook locations would be subjected to different potential sources of contamination than onsite ponds. Please delete this statement and similar ones throughout the document.
178	4.9.3	104	1	The statement is made that skeet shooting over the ponds is a potential source of PAHs and lead. Please provide evidence or delete this statement. See previous comments regarding skeet shooting over ponds.
179	4.9.3	104	1	Please remove comparison of pond sediments to upstream brook sediments, as they have different sources and aren’t comparable.
180	5.2.2	107	2	It is noted that risks are unlikely since tadpoles were abundant at many of the sampling locations. This statement should be clarified as the presence of an organism does not necessarily indicate any conclusive information regarding potential risk. This does not account for potential risks to species which may be more sensitive than tadpoles. This issue was raised in the review of the BERA. In the discussion of piscivorous birds and mammals it is stated that there is no risk to piscivorous birds. This statement should be reworded to indicate that there are “no unacceptable risks” as stated in the BERA. Additionally, this discussion should include what may be causing the potential risk to the piscivorous mammals. The conclusions of no potential risk to, herbivorous, insectivorous, and carnivorous birds and mammals should be changed to “no unacceptable risks”.
181	5.1.5	111	1	"An HI of less than one indicates that the adverse noncarcinogenic health effects are not likely to occur from exposure to the constituents that were considered in the assessment." Revise to include, "...or equal to..."
182	5.1.6	111	1	"An HI of greater than one does not imply the presence of significant risks, but rather that additional evaluation is required to adequately characterize the level of risk (CDM, 2014). Revise to include, "...but rather indicates that there is a potential for non-cancer health effects to occur, and the potential increases as the HI exceeds one."
183	5.1.6	115	Table	Revise the table to include the lead concentrations used as an input to the model.
184	5.1.7	116	3	Suggest revising the next to last sentence as follows: "Overall, carcinogenic ELCRs and non-carcinogenic HIs presented in this BHHRA are based upon conservative assumptions that are intended to be protective of human health by ensuring that site risks are not underestimated. Therefore, overall confidence in this risk assessment is high."
185	5.1.6	117	1	Please note the typographical error

186	5.2.1	117	3	The summary of the assessment endpoints only includes a list of receptors. It may be useful to include the full description of the assessment endpoints as presented in the BERA.
187	5.2.1	117	4	Please "spell out" the full assessment endpoints as they appear in the BERA.
188	5.2.1	117	4	It is true that literature-based uptake factors may be conservative, and in turn overestimate exposure; however, they may also underestimate exposure. It is recommended that the text be revised to read that there are many uncertainties when using literature-based values which may either lead to over-or under exposure and risk.
189	5.2.3	118	2	It is stated that the results of the BERA indicate that exposures to COPECs in the environmental media at the Site do not pose an ecological concern for most of the evaluated receptors and there is a low potential risk for short-tailed shrews and American robin. However, this statement may not be accurate. For example, in Section 5.2.2 BERA Results it is noted that there were potential risks to benthic invertebrates found. Therefore, it may be more appropriate to indicate that for most of the ecological receptors there were no unacceptable risks found.
190	5.2.2	119	2	The text says risks to amphibians and reptiles are unlikely because tadpoles were abundant at sample locations. The presence of tadpoles doesn't necessarily mean risks are unlikely. The text should be revised similar to the discussion in the final BERA.
191	5.2.2	119	5	The text indicates that there was potential for risk to piscivorous mammals, but does not say from what. Please revise the text to be consistent with other paragraphs summarizing model results and note the risk driver(s).
192	5.2.3	121	2	Suggest revising the text to read "there is potential risk to vermivorous mammals and birds, based on the short-tailed shrew and American robin models."
193	6.1	122	1	This section should specifically discuss the discharge point for the shallow water-bearing unit. It is only discussed in general terms in the third paragraph. The section also devotes a full paragraph to discussing the underlying clay aquitard but relatively little discussion of the shallow water bearing unit is provided. The conceptual model should expand the discussion of this unit because it is the primary pathway for contaminant migration in groundwater. The wide range of hydraulic conductivity estimates should be discussed in terms of formation material and continuity of more conductive sand beds. The discussion of saturated waste material should also indicate if the difference in depth to groundwater is a function of ground surface elevation or other waste characteristics and whether mounding of groundwater, typical of landfill, has resulted in a radial groundwater flow pattern. This is a key factor when evaluating the impact of "upgradient" contamination on the Site, as discussed in section 6.2.2.2.
194	6	122	1	There needs to be a discussion of groundwater/surface water interactions with regard to contaminant fate and transport. The only occurrences of discharge/recharge is the last paragraph in Section 6.2.2.2 and some discussion was presented in Section 3.4.2.2, but this needs to be applied to possible contaminant migration pathways.
195	6.1	122	2	The last sentence "In areas where the waste material was observed to be saturated at the surface, saturation was likely from precipitation and/or overland flow." Is this meant to be true for wetland areas with waste at the surface too? Because that is a groundwater/surface water interaction, only indirectly driven by precipitation.
196	6.2	122	5	There is no discussion at all regarding the nature and extent of contamination in surface water or sediment, and little on soil. In general, the majority of this section focuses primarily on groundwater and groundwater transport and little on the nature and extent of chemicals detected other than VOCs, CFCs, arsenic and lead in that media. There were some fairly high concentrations of lead and PCBs detected in soil and sediment. At a minimum there should be a discussion to put into context the concentrations detected, similar to what was done for VOCs and CFCs in groundwater.
197	6.2.2.1	123	2	This section, and section 4, require revision to include analysis of the potential for constituents in soil to migrate to groundwater, not just comparisons to direct contact soil remediation.
198	6.2.2.2	124	3	The "potential sources upgradient" should be specifically discussed.
199	6.2.2.2	124	3	In general, discussion of groundwater data from TWP's is omitted. This data is valuable and should be included in the summaries. For example, pg 125 paragraph 3 implies that benzene at MW-3 are localized because benzene was non-detect at downgradient MW-15. However, benzene was detected at downgradient GW-TWP-8 at similar levels to MW-3, and upgradient GW-TWP-6 and 7 at lower levels. The data from these wells needs to be included.
200	6.2.2.2	125	4	"Exceedances of GWQS at well MW-7 include indeno(1,2,3-cd)pyrene (one sampling event), 1,4-dioxane (one sampling event), and PCBs (two sampling events, both in 2015)." add "including benzene" to the list.
201	6.2.2.2	126	1	Because of the location of MW-7 and proximity of nearest wells (~1,000 feet), it is difficult to state that indeno(1,2,3-cd)pyrene is localized. Suggest rephrasing to say that impacts do not extend offsite in this area.
202	6.2.2.3	127	5	"As indicated above, groundwater and solute migration will occur in the more permeable sands and gravels and whereas the silt and clay materials will not transmit significant volumes of solutes to any significant degree." add "whereas", remove "and" after gravels
203	6.2.2.3	128	1	The text indicates that geochemical conditions can be either aerobic or anaerobic and what the fate of constituents like benzene could be. At this point the conceptual model should indicate that the conclusions are from the data collected to date. DO and ORP measurements from groundwater samples should give an idea of these conditions and a more definite statement should be made concerning the benzene concentrations at MW-3. This should also be the case in the last paragraph on page 129 where redox controlled metals are discussed.
204	6.3	131	2	The text suggests that concentrations of lead and other metals detected in soil samples may be naturally occurring. Although such a statement may have some merit, it is unlikely that the concentrations of lead and others are naturally occurring especially given that surficial soil is intermixed with refuse and debris which most likely is the source of metals detected.
205	6.3	131	3	This paragraph states that the overburden aquifer is in a thin, sandy and silty material that extends to 20 to 25 feet bgs. Most of the boring logs, however, indicate a shallower depth (~10 to 15 feet) to this interval.
206	6.3	131	4	Please see comment on Section 4.6.3 about increasing the number of impacted groundwater areas.

207	6.4	133	1	Additional justification should be provided for the offsite shooting range as a potential source of lead when the shooting range to the north of the landfill does not appear to be.
208	7	134	1	It is concluded that contaminants in the onsite ponds are similar to upgradient concentrations in Loantaka Brook and Black Brook. However, according to page 14 in Attachment J, several contaminants (barium, cadmium, calcium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, potassium, selenium, silver, sodium, vanadium, zinc, naphthalene and acetone) in the onsite ponds are not consistent with background concentrations. Therefore, this conclusion should be clarified.
209	7	134	2	Fifth bullet - More detail should be provided with regard to the Site impact on the "soil beneath" the landfill. It is not clear what type of soil this refers to. Where there is groundwater contamination, the fate and transport section indicates that contaminants should be adsorbing to soil.
210	Figures	N/A	N/A	<p>General Comments on Figures – Please review each figure for the clarity of presentation. Some examples of issues with figures are:</p> <ul style="list-style-type: none"> a. Ball field and shooting range should be labeled on figures, especially data figures. b. Figure 2-4 – there appears to be an unlabeled soil sample at MW-18. c. On Figure 3-3 it appears that basal colluvium and stream terrace deposits are given the same color. d. Attachment A Aerial photos – inset figures are missing (6, 8, 10, 12, 14). Figures 1 and 2 also missing. e. Label landscape areas on figures, outline which samples are referenced for each area. f. Typically contaminant data are provided in cross section, for vertical delineation. This could be provided for specific areas where deeper soil samples were collected.
211	Attachment 1	N/A	N/A	Exhibit C and B-3A use for cis and trans chlordane; summary table in Attachment I uses alpha and gamma chlordane; please use terminology consistent with report and tables.
212	Appendix B	N/A	N/A	<ul style="list-style-type: none"> a. On Appendix B-4C change 1,4-dioxane interim groundwater criterion to 0.4 ppb. b. 1,1,2-Trichloro-1,2,2-trifluoroethane interim specific groundwater criterion is 20,000 ppb. c. No VI screening levels included or tap water RSLs are provided, though headings are included on the table. d. Appendix B-6E has no standards or criteria whatsoever, only background threshold values.